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ABSTRACT

In 1987, the Chancellor's Office of the California Community Colleges (CCC) began implementation of the Management Information System (MIS) to improve its data collection and analysis capabilities by utilizing electronic mail communications systemwide. Specifically, the project seeks to replace paper copies of data generated for reporting requirements and serve as a resource for local research, examination of policy issues, and inquiries about the CCC. Phase I of the MIS was initiated in 1989-90, making data available concerning student profiles, course and program outcomes, matriculation, student services programs, high school performance reports, curriculum analysis, vocational education accountability, student high school of origin, and course data. To date, 57 of the 71 CCC districts have supplied all the MIS data files in phase I at least once. Phase II of the MIS project was begun in 1992, providing the CCC districts with grant money to enhance electronic mail access and make more data available via the MIS, including staff demographics, vocational education, basic skills limits, transfer and articulation, and college calendar information. In addition to the incentive grants, the Chancellor's Office has funded other projects to provide electronic access to frequently requested CCC documents. Appendixes provide information on districts reporting data as of August, 1993 and describe the Systemwide Communications Infrastructure designed by the California Community Colleges to aid the MIS project. (MAB)

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Board of Governors
California Community Colleges
September 9, 1993

CHANCELLOR'S OFFICE MANAGEMENT INFORMATION SYSTEM

6

A REPORT

Presentation: *Mick Holsclaw, Vice Chancellor*
Management Information Services

JC 930 357

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Board of Governors
California Community Colleges
September 9, 1993

CHANCELLOR'S OFFICE MANAGEMENT INFORMATION SYSTEM 6

A REPORT

Presentation: *Mick Holsclaw, Vice Chancellor*
Management Information Services

Issue

This item provides a report on the Chancellor's Office Management Information System.

Background

The Chancellor's Office Management Information System (MIS) has been a high priority of the Board of Governors for several years. Local funds, in the amount of $10.7 million, have been allocated to cover the costs of local implementation of MIS reporting requirements.

The pilot testing and implementation of the MIS have been divided into three stages. The first phase of statewide implementation began in the 1989-90 fiscal year. The second phase was funded for statewide implementation in the 1992-93 fiscal year. The third phase of the project has been pilot tested. The schedule for implementation of the third phase is under development.

Analysis

The first phase of the MIS project has achieved a level of completion sufficient to provide useful data. Data queries are being developed on a continuous basis to support Chancellor's Office staff as they carry out their responsibilities.

The diversity of the information system infrastructure among community college districts, the extent of competing priorities, and the size and expertise of districts' information systems staff all influence the ability to implement the required reporting capabilities. Lack of complete and accurate data from all districts

complicates the development of reports and increases the demands on Chancellor's Office staff for analysis prior to their use of the data to support policy analysis and development.

The Chancellor has taken a firm stand on the importance of using the MIS data submitted by the districts to produce reports. The acceptance by the districts of the necessity to provide accurate data is essential to the success of the MIS project and to the effective operation of the Chancellor's Office in these times of resource shortages.

Implications

The Chancellor's Office MIS has a major impact at both the systemwide and district levels. The information database created by the MIS is essential to support both policy making and accountability.

This report supports the following initiative from *The Basic Agenda: Policy Directions and Priorities for the Nineties*:

- Implement and fully evaluate the effectiveness of the systemwide MIS.

Chancellor's Office
Management Information System

A Status Report

Introduction

The Chancellor's Office Management Information System (MIS) is a long-term project. The concept of improving the data collection and analysis capabilities of the Chancellor's Office began to take specific shape in 1987. Funding for implementation of the MIS project was first provided in fiscal year 1989-90.

In recent months, the discussions of accountability and outcomes have heightened the expectations for the MIS. This report presents a summary of the current status of the MIS and some emerging challenges and opportunities. Following these, a more extensive description of the background, scope, and emerging capabilities of the system are presented. Finally, Appendix D provides additional detail concerning special activity in systemwide communications, which is supportive of both timely operation of the MIS and improved communications within the community college system.

Current Status of the MIS Project

MIS Is in Use and Ready for Increased Usage

The reporting of MIS Phase I data has improved and continues to achieve higher levels of completion, term-by-term. There has been substantial improvement since November 1992, when the Board of Governors established the completion of MIS Phase I reporting requirements as a condition for the release of MIS Phase II implementation funding. All districts have reported the files specified for student demographics, course offerings, and student enrollments at least once.

Fifty-seven districts have reported all the MIS data files at least once, demonstrating the capability to collect and report the data as specified for MIS Phase I. Fourteen districts have yet to report one or more of the data files specified. Appendix A lists all the districts and indicates which districts have never submitted one or more of the required files.

Some districts have demonstrated the capability to collect and report MIS Phase I data, but have not continued to report the data in a timely manner. Twenty-four districts have failed to provide data for fall 1992, spring 1993, or annual 1991-92 (due in October 1992). Appendix B lists all districts and indicates those districts which have not reported data according to the MIS reporting schedule.

Appendix C lists those districts which are current in their reporting of MIS data from 1991-92 annual data through fall 1992 and spring 1993. These 47 districts evidence a thorough and disciplined commitment to fulfilling the reporting requirements of MIS Phase I.

Last September, in the MIS report to the Board of Governors, it was reported that the project had matured to the point that the focus needed to shift to increased usage of the MIS data resource in response to requests for data. Greater than one hundred responses to information requests were produced last year from the MIS data, for both the internal use by the Chancellor's Office and for the preparation of materials for distribution to the Legislature and the Governor.

The first phase of the MIS project provides information concerning the demographic characteristics of students enrolled in community colleges. It provides an inventory of the courses offered, as well as the numbers of students enrolled in the various courses. Course completions, grades, and degrees and certificates awarded are some of the outcomes information available in MIS Phase I. These data also enable the identification of students participating in categorical programs and the comparison of the outcomes of the participants in these programs with the outcomes of other students.

Some of the more prominent uses of MIS data during 1992-93 are summarized below.

- During 1991-92, MIS data were used to support the activities of the Vocational Education division as new allocation processes and new reporting requirements were implemented.

- More than fifty data tables were provided to support the Research and Analysis unit's investigation of the impact of the state's fiscal crisis on the course offerings and enrollment patterns of the system.

- During 1991-92, MIS data were used to implement draft versions of the Model Accountability System. These drafts were distributed to the colleges for review prior to the production of the first official reports based upon 1992-93 data.

- In cooperation with the Intersegmental Coordinating Council (ICC), MIS data were provided to support the ICC transfer-rate study. These data identify a cohort of likely transfer students during their first year of enrollment at community colleges and will track them over several years as they pursue their educational goals.

MIS Usage Will Increase Dramatically During 1993-94

MIS data collected during the 1993-94 academic year will be used in various funding formulas. Districts will be provided with reports that can be used to identify reporting problems and can guide their efforts to correct data collection deficiencies.

The maturation of the MIS provides the opportunity to eliminate redundant reporting. Hard copy reporting will be dramatically reduced as the Chancellor's Office relies on the data reported through the MIS as the official district report of student enrollments, program participation, and student workload.

MIS Costs Are Significant

The operational costs of the California Community Colleges Management Information System are a significant portion of the Chancellor's Office budget. The MIS division employs twenty staff, and the 1993-94 data processing contract with the state data processing center is budgeted at $475,000. As the state General Fund support for the Chancellor's Office continues to shrink, the MIS division and the MIS project cannot be completely sheltered from the impact of shrinking resources. Over the last three years, division staffing has been reduced by five positions. The conflict between the necessary and increasing costs of operation of the MIS and the available resources constitutes a vulnerability to the project.

The MIS division has responded to shrinking resources by researching alternative procedures and approaches that will deliver the required functions of the MIS but with greater independence from escalating costs.

Because the need for efficiency and improved cost effectiveness has never been greater, efforts are under way to improve the timeliness of data collection and to achieve more efficient processing through the automation of routine and repetitive activities. Further, the Chancellor's Office is developing improved procedures for the direct electronic submission of MIS data over statewide networks, to greatly reduce the workload and costs associated with data tapes transmitted through the mail.

The MIS division is also working with the districts to provide improved mechanisms for the districts to verify the accuracy and completeness of their data submissions prior to sending them to the Chancellor's Office. Reduction in the number of times districts resubmit their data to correct errors has the potential to offset the increased processing and storage costs associated with the implementation of MIS Phase II.

In addition to containing costs at the Chancellor's Office, the MIS division is working with district research staff to utilize the MIS to support local research and accountability efforts. The use of standard sets of data from comparable colleges and districts can aid the districts to reduce costs and increase the effectiveness of their management information capabilities.

MIS is Developing the Statewide Electronic Infrastructure

The Board of Governors approved an expenditure plan for MIS Phase II in November 1992. This plan provides $1 million to improve the electronic communication capabilities of the system. Most of the funds have been used to provide incentive grants for districts to implement connections to state and national networks, which enables electronic mail communications throughout the California Community Colleges system. These same connections create the capability for direct electronic submission of data and for electronic distribution of MIS reports.

All seventy-one districts have accepted these grants, which provides, at minimum, electronic mail access to participants in the formal consultation process. (Appendix D provides a more extensive discussion of the communications component of MIS Phase II.)

The Chancellor's Office will rely on the emerging communications network as a primary means of communication to support the formal consultation process. In addition, key legislative updates and other Chancellor's Office communications can be distributed via electronic mail.

Reports and summary data files will be electronically published, to provide local district staff access to data and information that will support comparison of their efforts with those of other California Community Colleges.

In addition to the incentive grants, the Chancellor's Office has funded three special projects that will provide electronic access to documents, such as the Board of Governors' agendas, regulations, guidelines, policy documents, legal opinions, and special project reports. These items are frequently requested from Chancellor's Office staff on an ad hoc basis. The electronic publication of these documents will provide an increased level of service to district and college staff despite decreasing Chancellor's Office staffing levels. Additional detail concerning these special projects is found in Appendix D.

The Chancellor's Office MIS Continues to Respond to Emerging Requirements

Over the years, the design for the MIS has been subject to continuous refinement. Various forces continue to shape the development of the MIS. Taken together, these forces provide the impetus for the establishment of a policy advisory committee. This broadly-based committee would have the responsibility to advise the Chancellor regarding the continued development and effective use of the MIS to serve local and system requirements for information and accountability. Among the forces involved in the continued reshaping of the MIS are:

- Implementation strategies for the MIS, which are influenced by the increasing recognition of the essential requirement for educational use of

emerging communications technology. Improved telecommunications capabilities enable more efficient data collection and information distribution processes.

- Federal agencies, which have initiated changes in regulations to increase outcomes reporting from educational institutions participating in federal financial aid programs. Increasing demands from the federal government, in response to the concern over student loan defaults, drives a reexamination of MIS reporting structures. It may be that minor modifications in the reporting requirements of the MIS will enable the Chancellor's Office to provide a centralized service to the colleges to meet the increasingly burdensome reporting requirements of the federal government.

- Intersegmental efforts to respond to the public's interest in the effectiveness of public education, which drives data sharing and cooperative data analysis. The result is likely to be a higher education database that will enable intersegmental student-flow analysis.

- Local and statewide accountability requirements, which push to the forefront the need for readily accessible statewide and college-level data. In addition, there is a significant opportunity to develop standard reports and analyses from MIS data that will simplify the implementation of local efforts, including the implementation of local student equity plans.

Background and History of the MIS Project

For the last seven years, the Board of Governors has made the design, development, and implementation of a systemwide management information system a major priority in *The Basic Agenda* and in annual budget requests. The MIS provides essential information to support policy analysis, planning, and operational activity of the Chancellor's Office. Whereas MIS data are essential to the development of the reports specified in the Model Accountability System, completion of the MIS project is the foundation for the continued development of the Board of Governors' initiative in accountability.

After two years of pilot testing with five community college districts, the 1989-90 budget provided $6.4 million to fund systemwide implementation of MIS Phase I requirements (student and course data), while further MIS design and development activities continued with the pilot districts.

The final budget for 1992-1993 provided $4.3 million for statewide implementation of the second phase of the MIS project. In November 1992, the Board of Governors approved a plan for the distribution of these funds to accomplish the goals of the MIS project. The release of MIS Phase II funds to the districts was made contingent upon the completion of MIS Phase I reporting requirements.

MIS Project Overview

Purpose

The Chancellor's Office Management Information System is designed to replace a multitude of automated and hard-copy reports, required by the Chancellor's Office and other state and federal agencies, with a limited set of common data elements to be reported electronically to the Chancellor's Office by local districts. Chancellor's Office staff have the responsibility to incorporate the data into a systemwide MIS database, which is then used to generate the required state and federal reports. The database also serves as a resource for both Chancellor's Office and local research, for examination of policy options and implications, and to respond to inquiries about the California Community Colleges.

Design Objectives

The MIS system has been designed and developed to meet the following objectives:

- Provide information on student outcomes
- Develop longitudinal student data
- Integrate multiple reporting requirements into one database
- Support system and local accountability activities
- Provide information for management use
- Provide flexibility to meet emerging information requirements

Scope

The MIS system is designed to meet state and federal data reporting requirements for the following areas:

- Demographics of students and staff
- Course information, including course outcomes
- Degrees, certificate programs, and awards granted
- Student academic progress
- Program participation information (EOPS, DSPS, GAIN, etc.)
- Fiscal and facilities information

The system is designed to collect detailed information—as opposed to aggregated data. Detailed data provides maximum flexibility in response to emerging requirements for responses to support policy analysis.

The overall MIS system design was developed during 1986-87 under a contract with the Price Waterhouse Management Consulting Group. The design was approved in 1987 by the Office of Information Technology and the Department of Finance. The project was structured into three phases.

Phase I	Phase II	Phase III
Student Demographics	Staff Demographics	Finance
Student Support Programs (EOPS, DSPS, Financial Aid, GAIN, Matriculation)	Vocational Education	Facilities
Program Completions *(degrees)*	Basic Skills Limit	Student Services Utilization
Course Outcomes *(grades/drops)*	Transfer and Articulation	Program and Course Approval
	College Calendar	

This multi-phasic approach provides an orderly process for design, development, pilot testing, and implementation of new reporting requirements. Each phase is pilot tested with five community college districts prior to statewide implementation.

The First Phase of the MIS Project Supports Analysis of Student Outcomes

The success of the MIS project will be judged by the timeliness and accuracy of the data output from the system. The first phase of the project makes possible the following data query capabilities:

- *Student Profiles*—Descriptive information on students' ethnicity, gender, age, credit load, and previous education are reported for each academic term. These student characteristics can be related to all other reported information. This integration allows the development of reports describing the enrollment activity and the outcomes of various student population groups. This capability was recently used to report the courses taken by students with baccalaureate degrees.

- *Course Outcomes*—An essential component of the new reporting structures is the reporting of course completion information. These data allow analysis of course completions and grade distributions by credit status, program area, and student characteristics.

- *Program Outcomes*—Program completion data report the number of certificates and degrees awarded. These awards can be profiled by student characteristics and other information reported in the system. This capability has been utilized to produce the federal Integrated Postsecondary Education Data Systems (IPEDS) Completions report that formerly had to be completed by hand by each college.

- *Matriculation Information*—Matriculation data allow for the identification of student goals, majors, service needs, and assessment results, and provide

the ability to link these characteristics to subsequent student persistence and performance, including course and program outcomes.

- *Student Services Program Information*—Student participation in many of the categorically-funded student services programs (EOPS, DSPS, Financial Aid, GAIN, transfer centers, etc.) is reflected in the MIS reporting. The characteristics of students served by these programs can be described, as can student performance and retention. These data also allow for the identification of the student populations served by multiple programs.

- *High School Performance Reports*—The MIS division is pilot testing reports for high schools on the performance of recent graduates enrolled in community colleges. These reports are designed to be comparable to those currently prepared by the system offices at both the University of California and the California State University. Each high school will receive a report detailing how many recent graduates enroll at the various community colleges, and how many enrollees persist through the first year.

- *Curriculum Analysis*—The number of sections offered, the average class size, and student retention will be developed by program area (TOP code). Such measures are often used in institutional program review activities.

- *Vocational Education Accountability*—Federal vocational education regulations require a variety of accountability activities and reports that will be supported by the MIS data collection system.

- *High School of Origin*—The California Postsecondary Education Commission and the California Department of Education use demographic information on first-time students by high school of origin to support their annual publications.

- *Summary Data Files*—At an aggregate level, MIS data files have been developed as a means of promoting the use of MIS information to support local research and planning activities. These files will allow local institutions to define comparison groups for their own analysis. Completed summary-level files include:

    - Student Demographics and Summary Workload
    - High School of Origin and Performance
    - Student Outcomes by Instructional Program Area
    - Student Outcomes by Student Demographics
    - Student Outcomes by Categorical Program
    - Faculty Workload by Program Area

The MIS unit is working with other units within the Chancellor's Office to define reports and files that will eliminate the need for much supplemental reporting. Among the units actively involved in defining reports are EOPS, DSPS, and GAIN.

During the implementation of MIS Phase I, precedence was necessarily given to the many tasks related to the collection of the data in the new formats. During 1992-93, the maturity of the data collection process has allowed increased emphasis on the development of reports to serve the needs of the Chancellor's Office and the colleges.

The MIS report to the Board of Governors, presented in September 1992, stated that the following data queries would be generated from the MIS by December 30, 1992:

- *Year-to-Year Comparisons*
  - Course offerings by TOP code
  - Course enrollments by TOP code
  - Basic skills enrollments
  - Basic skills offerings
  - Basic skills completions
  - Transferable course offerings
  - Transferable course enrollments
  - Transferable course completions
  - Course completions with grade of C or better
  - Course completions with grade of D or better
- *Single-year Examinations*
  - Enrollments of first-time freshmen in transferable, AA degree, non-degree credit, and noncredit courses
  - Persistence of first-time students from term-to-term
  - Unduplicated annual headcounts
- *Data Extracts to Support Multi-year Studies*
  - ICC transfer rate study
  - CSU/UC/Chancellor's Office concurrent enrollment study
- *Support for the California Community Colleges Accountability Indicators Report*
  - Four of the five student access measures
  - Two of the three student success measures
  - Both of the staff composition measures

These queries were produced within the allotted time frame. Many additional programs were written and data tables were generated during the early months of 1993 to support the Chancellor's Office efforts to effectively represent the community college system.

The Second Phase of the MIS Project Adds Breadth to the MIS

MIS Phase II completes additional portions of the overall MIS project design by adding new components and modifying some of the components implemented in Phase I. Phase II will provide the following:

Support for Federal Vocational Education Reporting—The Phase II VATEA data will provide the California Community Colleges with the ability to meet the reporting requirements of the Carl D. Perkins Vocational and Applied Technology Education Act of 1990 (VATEA). These data, collected in conjunction with Phase I data, enable the Chancellor's Office to assess special populations of vocational students with regard to academic achievement, access, retention, and headcounts for funding purposes. They also provide, in an automated form, information for identifying college-targeted vocational programs.

Precollegiate Basic Skills Information—The Precollegiate Basic Skills data will provide the Chancellor's Office with the ability to identify students who have reached or exceeded the thirty-unit precollegiate basic skills limit, as well as data that can be used to track the effects of the thirty-unit limitation, as required by legislation.

College Calendar—The College Calendar data, in conjunction with FTES data, will provide the data necessary to compute district funding allocations. This component automates a manual process, which has required many hours of Chancellor's Office staff time.

Employee Data—The employee data will provide a linkage of employee information to student and curricular information, thus allowing the Chancellor's Office to answer questions such as, "What areas of the curriculum are taught primarily by part-time faculty?" The data will also provide a more complete annual view of staffing, complementing the "fall snapshot" currently collected.

Course Articulation—This component will add identification of courses in the California Articulation Number (CAN) system, as well as identification of articulated California State University courses. This enhances the automated support for efficient and effective counseling of students with transfer goals.

Miscellaneous Additions and Modifications—As a result of changing federal and state regulations, some Phase I components have been modified. The intent of these modifications is to substantially reduce the number of manual reports required from the districts.

Implementation Schedule

Figure 1 provides a timeline display of the schedule for integration of MIS Phase II reporting into the existing MIS Phase I reporting structures and timelines. By December 30, 1994, all term-end Phase II reporting structures will be implemented. By July 1995, the last of the new Phase II files, the employee year-end file will be reported.

As MIS Phase II implementation is brought to completion, the MIS project will be substantially complete. It will be necessary to bring forward a budget change proposal for 1995-96 to fund implementation of the third phase of the project. The third phase will be significantly smaller in scope than either of the first two phases.

It is our intention to address the facilities and finance portions of the original MIS design through the development and distribution of microcomputer programs. These programs will be developed during 1993-94 and should be in active use throughout the system during 1994-95. The Program and Course Approval portions of the original design for Phase III may also be solved in this manner. Should these results be achieved, the remaining portion of the original project design to be implemented statewide would be Student Services Utilization.

It has been a long and arduous process to design and implement the Chancellor's Office Management Information System. Much progress has been made, and major work is scheduled for 1993-94 and 1994-95. As this work comes to completion, a fully functional management information system for California Community Colleges will be realized.

APPENDIX A

Appendix A indicates the districts that have never reported one or more of the data files required for MIS Phase I reporting. All but fourteen districts have submitted the complete set of Phase I data files.

CALIFORNIA COMMUNITY COLLEGES
MIS IMPLEMENTATION PHASE I
INCOMPLETE REPORTING

DISTRICT	EOPS	DSPS	MATRIC	FINANCIAL AID	DEGREES & AWARDS
ALLAN HANCOCK					
ANTELOPE	X		X		
BARSTOW					
BUTTE					
CABRILLO					
CERRITOS					
CHABOT-LAS POSITAS					
CHAFFEY				X	
CITRUS			X		X
COAST					
COMPTON					
CONTRA COSTA					
DESERT					
EL CAMINO					
FEATHER RIVER					
FOOTHILL					
FREMONT			X		
GAVILAN	X	X	X		

Legend: the "X" indicates a file type that has never been reported.

DISTRICT	EOPS	DSPS	MATRIC	FINANCIAL AID	DEGREES & AWARDS
GLENDALE					
GROSSMONT					
HARTNELL					
IMPERIAL				X	X
KERN					
LAKE TAHOE					
LASSEN				X	X
LONG BEACH			X		
LOS ANGELLS					
LOS RIOS	X		X		
MARIN					
MENDOCINO					
MERCED					
MIRA COSTA					
MONTEREY					
MT SAN ANTONIO					
MT SAN JACINTO					
NAPA				X	X
NORTH ORANGE					
PALO VERDE					
PALOMAR					
PASADENA					
PERALTA					

Legend: the "X" indicates a file type that has never been reported.

DISTRICT	EOPS	DSPS	MATRIC	FINANCIAL AID	DEGREES & AWARDS
RANCHO SANTIAGO					
REDWOODS					
RIO HONDO					
RIVERSIDE					
SADDLEBACK					
SAN BERNARDINO					
SAN DIEGO			X		
SAN FRANCISCO					
SAN JOAQUIN					
SAN JOSE					
SAN LUIS OBISPO					
SAN MATEO					
SANTA BARBARA					
SANTA CLARITA					
SANTA MONICA					
SEQUOIAS					
SHASTA					
SIERRA					
SISKIYOUS					
SOLANO					
SONOMA					
SOUTHWESTERN					
STATE CENTER					

Legend: the "X" indicates a file type that has never been reported.

DISTRICT	EOPS	DSPS	MATRIC	FINANCIAL AID	DEGREES & AWARDS
VENTURA					X
VICTOR VALLEY					
WEST HILLS			X	X	
WEST KERN			X		
WEST VALLEY					
YOSEMITE					
YUBA					

Legend: the "X" indicates a file type that has never been reported.

APPENDIX B

Appendix B indicates districts that are not current on their submissions as of August 19, 1993. No submission was received for the data files indicated below for Fall 1992, Spring 1993 or Annual (Financial Aid and Degrees and Awards) 91-92.

DISTRICT	CURRENT REPORTING STATUS
ALLAN HANCOCK	All Data Submitted
ANTELOPE	No Matriculation data for Fall 1992 or Spring 1993
BARSTOW	All Data Submitted
BUTTE	All Data Submitted
CABRILLO	All Data Submitted
CERRITOS	All Data Submitted
CHABOT-LAS POSITAS	No data for Spring 1993
CHAFFEY	No Financial Aid data for 91-92
CITRUS	No data for Spring 1993 or Degrees and Awards data for 91-92
COAST	No data for Spring 1993
COMPTON	No data for Spring 1993
CONTRA COSTA	All Data Submitted
DESERT	All Data Submitted
EL CAMINO	All Data Submitted
FEATHER RIVER	All Data Submitted
FOOTHILL	All Data Submitted
FREMONT	No Matriculation data for Fall 1992 or Spring 1993
GAVILAN	No data for Fall 1992, Spring 1993, or Annual 91-92
GLENDALE	No data for Spring 1993
GROSSMONT	All Data Submitted

HARTNELL	All Data Submitted
IMPERIAL	No Financial Aid or Degrees and Awards data for 91-92
KERN	All Data Submitted
LAKE TAHOE	All Data Submitted
LASSEN	No data for Fall 1992 or Spring 1993 or Financial Aid or Degrees and Awards data for 91-92
LONG BEACH	No Matriculation data for Fall 1992 or Spring 1993
LOS ANGELES	All Data Submitted
LOS RIOS	No EOPS or Matriculation data for Fall 1992 or Spring 1993
MARIN	No data for Spring 1993
MENDOCINO	All Data Submitted
MERCED	No data for Spring 1993
MIRA COSTA	All Data Submitted
MONTEREY	No data for Spring 1993
MT SAN ANTONIO	All Data Submitted
MT SAN JACINTO	All Data Submitted
NAPA	No data for Fall 1992 or Spring 1993 or Financial Aid or Degrees and Awards data for 91-92
NORTH ORANGE	All Data Submitted
PALO VERDE	All Data Submitted
PALOMAR	No data for Spring 1993
PASADENA	All Data Submitted
PERALTA	All Data Submitted
RANCHO SANTIAGO	All Data Submitted
REDWOODS	All Data Submitted

RIO HONDO	All Data Submitted
RIVERSIDE	All Data Submitted
SADDLEBACK	All Data Submitted
SAN BERNARDINO	No data for Fall 1992 or Spring 1993 or Financial Aid or Degrees and Awards data for 91-92
SAN DIEGO	No Matriculation data for Fall 1992 or Spring 1993
SAN FRANCISCO	No data for Spring 1993
SAN JOAQUIN	All Data Submitted
SAN JOSE	All Data Submitted
SAN LUIS OBISPO	All Data Submitted
SAN MATEO	All Data Submitted
SANTA BARBARA	All Data Submitted
SANTA CLARITA	All Data Submitted
SANTA MONICA	All Data Submitted
SEQUOIAS	All Data Submitted
SHASTA	All Data Submitted
SIERRA	All Data Submitted
SISKIYOUS	All Data Submitted
SOLANO	All Data Submitted
SONOMA	All Data Submitted
SOUTHWESTERN	All Data Submitted
STATE CENTER	All Data Submitted
VENTURA	No Degrees and Awards data for 91-92
VICTOR VALLEY	All Data Submitted
WEST HILLS	No Matriculation data for Fall 1992 or any data for Spring 1993 or Financial Aid or Degrees and Awards data for 91-92

WEST KERN	No Matriculation data for Fall 1992 or Spring 1993
WEST VALLEY	All Data Submitted
YOSEMITE	All Data Submitted
YUBA	All Data Submitted

APPENDIX C

Appendix C lists districts which have established the capability to report all of the data files required in MIS Phase I and have reported these files for Annual 91-92, Fall 92 and Spring 93.

ALLAN HANCOCK
BARSTOW
BUTTE
CABRILLO
CERRITOS
CONTRA COSTA
DESERT
EL CAMINO
FEATHER RIVER
FOOTHILL
GROSSMONT
HARTNELL
KERN
LAKE TAHOE
LOS ANGELES
MENDOCINO
MIRA COSTA
MT SAN ANTONIO
MT SAN JACINTO
NORTH ORANGE
PALO VERDE
PASADENA
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SAN JOAQUIN
SAN JOSE
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SANTA BARBARA
SANTA CLARITA
SANTA MONICA
SEQUOIAS
SHASTA
SIERRA
SISKIYOUS
SOLANO
SONOMA
SOUTHWESTERN
STATE CENTER
VICTOR VALLEY
WEST VALLEY
YOSEMITE
YUBA

APPENDIX D

MIS Support for the California Community Colleges Systemwide Communications Infrastructure

There is currently a great deal of interest in communications technology and distance education through broadcast and networked video. There are many levels of discussion, ranging from the details of wiring and electronic signaling to the design and implementation of effective instructional activity utilizing the various technologies.

The MIS division of the Chancellor's Office is involved with the connectivity issues (wiring and signaling protocols) necessary and foundational to the provision of various services, such as electronic mail, FAX transmission, and interactive video. Other divisions within the Chancellor's Office are working with district and college staff in the area of instructional uses of the technological infrastructure.

The communications grants and special projects funded with the $1 million of MIS Phase II implementation funds are being guided by the following three principles:

- Do not duplicate infrastructure that already exists. Several wide-area networks already exist in California, including BARRnet, CERFnet, and CSUnet. Community college efforts should be directed toward connecting to these existing networks rather than duplicating and competing with them.

- Utilize established standards and conventions to multiply the impact of connectivity and service efforts. The national and international Internet has established effective ways to exchange mail and to publish electronic information. The California Community Colleges' efforts in these areas should conform to the Internet standards; with this approach, the skills that college staff develop to access California Community Colleges services and resources also allow them to access national and international resources.

- In times of constrained resources, it is important to provide a low-cost entry point and an incremental growth path that allow districts to closely balance costs to services and benefits received, without sharp cost spikes.

MIS Phase II Communications Projects

Figure 2 provides a graphical overview of the special projects in relation to the overall communications network emerging to serve the needs of California Community Colleges.

1. Communication Grants

All seventy-one districts have accepted the $10,000 Communication Grant. In return for the grant, each district agreed to provide an electronic mail box and all the necessary equipment, software, and training to utilize the electronic mail services (via the Internet) at a minimum to the following district and/or college individuals by December 31, 1993:

Superintendent/President
President of the Board of Trustees
Chief Instructional Officer
Chief Business Officer
Chief Student Services Officer
Chief Information System Officer
Chief Human Resources Officer
Public Information Officer
Academic Senate President
Student Body Government President

2. Special Projects

Directory Service and Text Database Server

Cerritos Community College District submitted the winning proposal for installing and operating an E-Mail Directory Service, a Gopher Database and Server, and a WAIS Database and Server (descriptions follow). The directory service will allow any California Community Colleges Internet E-Mail user to find the Internet E-Mail address of another California Community Colleges Internet E-Mail user. The Gopher and WAIS servers will allow the Chancellor's Office and districts to "publish" documents, reports, and data on these servers. Once these resources have been "published," California Community Colleges Internet users can search for and retrieve the information. The Gopher and WAIS overviews, following, provide additional information about these services.

Internet Access to InfoNet

The Chancellor's Office funded the Yosemite district proposal to provide full Internet access to InfoNet, a bulletin board service currently accessed by phone

connections. When complete, this will allow current InfoNet users to exchange E-Mail with all Internet E-Mail users and provide California Community Colleges Internet users full access to InfoNet services across the wide area network.

Dial-Up Access to the Internet

The Chancellor's Office also funded the Siskiyou district proposal to provide community colleges with dial-up access to the California Community Colleges services discussed earlier. This project, together with the Cerritos project, will provide community colleges with dial-up access points in both southern and northern California.

Cerritos College is in the process of installing a Gopher server to serve California Community Colleges. This server provides a set of menu choices to a remote user. The user searches for documents, reports, and data files by making successive choices from the menus. When the desired information has been located in the menu structure, the remote user can view the information on screen, secure a copy of the information for local use, or can initiate an action described by the menu choice.

The text following provides some general information about the capabilities of Gopher servers. It has been taken from *The Whole INTERNET User's Guide and Catalog*, Ed Krol, O'Reilly and Associates, Inc., and edited for use in this report.

The Internet Gopher

gopher n. 1. Any of various short-tailed, burrowing mammals of the family Geomyidae, of North America. 2. (Amer. colloq.) Native or inhabitant of Minnesota: the Gopher State. 3. (Amer. colloq.) One who runs errands, does odd jobs, fetches or delivers documents for office staff. 4. (computer tech.) software following a simple protocol for burrowing through a TCP/IP internet.

Abstract[1]

The internet Gopher protocol is designed for distributed document search and retrieval. The protocol and software follows a client-server model. Documents reside on many autonomous servers on the Internet. Users run client software on their desktop systems, connecting to a server and sending the server a request via a TCP

[1] The internet Gopher protocol, a distributed document search and retrieval protocol, Bob Alberti, Farhad Anklesaria, Paul Lindner, Mark McCahill, Daniel Torrey, University of Minnesota Microcomputer and Workstation Networks Center, Spring 1991; Revised Spring 1992

desktop systems, connecting to a server and sending the server a request via a TCP connection. The server responds with a resource (document) or an access to a resource (FTP, Telnet . . .).

While documents (and services) reside on many servers, Gopher-client software presents users with a hierarchy of items and directories much like a file system. The Gopher interface is designed to resemble a file system since a file system is a good model for organizing documents and services; the user sees what amounts to one big networked information system containing document items, directory items, and full-text searching capabilities across subsets of the information base.

The Internet Gopher[2]

Gopher, or more accurately "The Internet Gopher," allows a user to browse for resources using menus. When a user finds something he likes, the user can read or access it through the Gopher without having to worry about domain names, IP addresses, changing programs, etc. For example, if a user wants to access the on-line library catalog at the University of California, rather than looking up the address and telnetting to it, the user finds an entry in a menu and selects it. Gopher then "goes fer" it.

The big advantage of Gopher isn't so much that one doesn't have to look up the address or name of the resources, or that one doesn't have to use several commands to get what is wanted. The real cleverness is that it makes it possible to browse through the Internet's resources, regardless of their type, like one browses through the local library with books, filmstrips, and phonograph records on the same subject grouped together . . . .

Unfortunately, Gopher services did not hire highly trained librarians. There's no standard subject list, like the Library of Congress Subject Headings, used on Gophers to organize things. . . . Each server is a bit different–the user has to approach each one with an open mind.

Gopher does not allow access to anything that couldn't be made available by other means. There are no specially formatted "Gopher resources" out there, in the sense that there are FTP archives or white pages directories. But, once one finds something of interest, Gopher will also help retrieve it. Gopher knows which application (telnet, ftp, white pages, etc.) to use to get a particular thing of interest and does the work necessary to access it.

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[2] The Whole INTERNET User's Guide and Catalog, Ed Krol, O'Reilly and Associates, Inc.

The Gopher server established with MIS Phase II funds will provide access to a variety of materials already available in hard copy. These materials will be more easily accessible through the Gopher server. Some of the materials intended for publication on the Gopher server are listed below.

- *California Community Colleges Board of Governors' Agendas*
- *Consultation Digest and Summaries*
  - Consultation Documents
  - Draft Regulations
  - Draft Policies
- *MIS Data Element Dictionary and Program Specifications*
  - Phase I Edit Specifications
- *Vocational Education Special Project Reports*
- *Fund for Instructional Improvement Special Project Reports*
- *Fiscal Data (Fiscal Data Abstracts)*
- *Apportionments*
  - Exhibit A1–A10
  - Exhibit C, C1–C3
  - Exhibit D
  - Exhibit E, E1
  - Exhibit F, F1
  - Exhibit G, G1
  - Growth Calculations
- *MIS Summary Data Files*

WAIS Overview

For California Community Colleges, the WAIS server provided by Cerritos will enable college and district staff to use key word searches to locate relevant documents and materials stored on the WAIS and Gopher servers. Once located, these documents can be retrieved and printed locally.

The following information is taken from "WAIS Overview," Barbara Lincoln, Thinking Machines Corp. It has been edited to make more clear the use of this software in the California Community Colleges environment.

WAIS: Wide Area Information Servers

WAIS—The Wide Area Information Servers system—is an electronic publishing software set that enables a computer user to search out and retrieve multimedia information from databases anywhere in the world. This information can be drawn from data stored on one's own desktop, in an organization's mainframe, or in a supercomputer on another continent. WAIS software includes user interfaces for most platforms and server software that provides automatic indexing of databases.

WAIS was developed by Thinking Machines Corporation of Cambridge, Mass., in collaboration with Apple Computer, Inc., Dow Jones & Company, and KPMG Peat Marwick. With over 100 databases and 5,000 users worldwide, WAIS is rapidly becoming a standard for information distribution within the Internet environment. Much of the software is currently available for free use.

What Does WAIS Do?

WAIS allows multimedia information to be stored anywhere on any platform. Using the interface of choice, WAIS enables a person to find personal, corporate, and public information. The information is accessible regardless of format: text, formatted documents, pictures, spreadsheets, graphics, sound, or video. WAIS recognizes natural language queries. The search and retrieval of relevant information is made using one's native language. To date, English, French, Italian, and Latin have been used. The most relevant documents, regardless of size, can be sent back to the server in their entirety to further refine the search (telling the server, "Find more like this document"). Proven searches can be automatically repeated, monitoring and alerting the user to new information as it becomes available.

How Does WAIS Work?

WAIS uses a single computer-to-computer protocol (NISO Z39.50). Each WAIS server reads the question submitted, and based on the words in the question, searches the full text of the database for the most relevant documents and ranks them using automatic word weighting. Servers need not fully understand the query; the retrieval process is based on a search method called *relevance feedback*. Thinking Machines Corp. provides an implementation of Z39.50 to help vendors develop interfaces and servers.

What is Available on WAIS Servers?

After six months of development, there are over 100 servers on the Internet. More than 5,000 people have used WAIS in 20 countries.

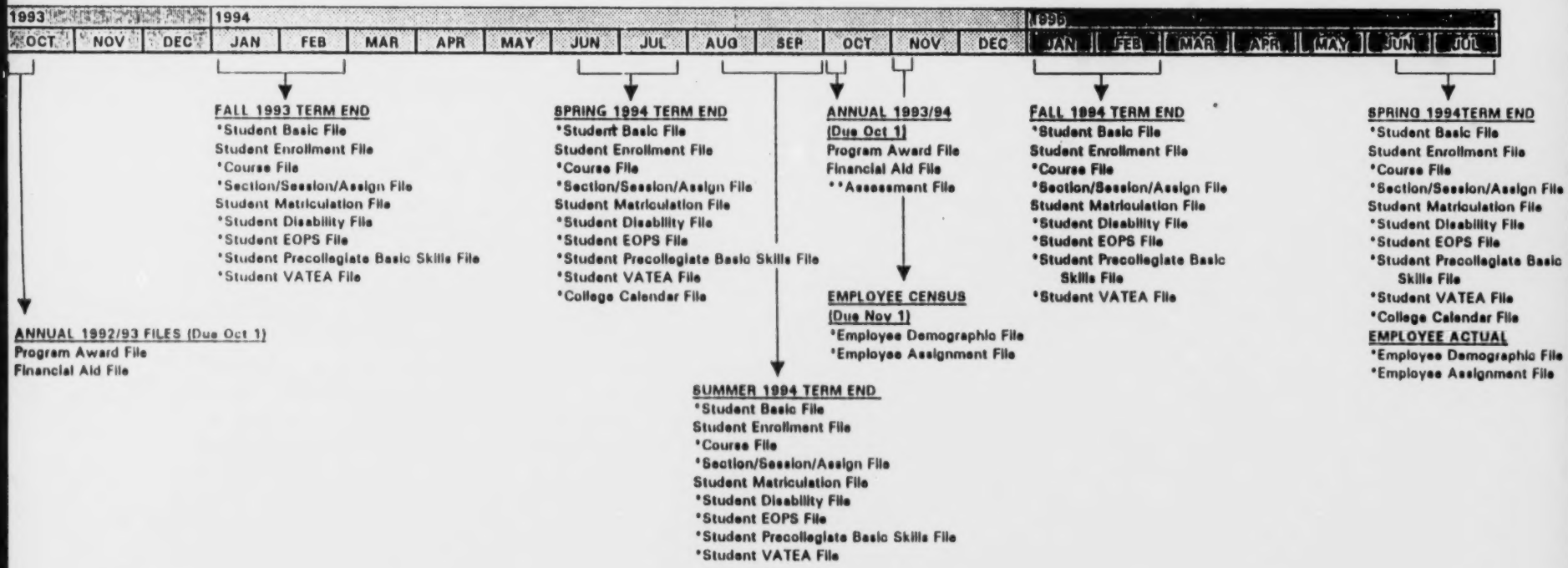
- On one of its Connection Machine supercomputers tied to Internet, Thinking Machines maintains a number of free databases.

- MIT supports a poetry server with classical and modern poetry.
- Cosmic is publishing descriptions of government software packages.
- The Library of Congress has plans to make its catalog available via the protocol.
- The speeches of President George Bush and the speeches and press releases of President Bill Clinton are available on a WAIS server.
- Weather maps and forecasts are made available by Thinking Machines.
- The "directory of servers" facility is operated by Thinking Machines; it registers, lists, and describes the information available on each server, including any fees for its use.
- Dow Jones will have a server available on their DowVision network that will contain several months of the Wall Street Journal and 450 business publications; this will be a "for-pay" server.

CALIFORNIA COMMUNITY COLLEGES
MANAGEMENT INFORMATION SYSTEM

MIS DATA SUBMISSIONS TIMELINE

October 1993 - July 1995



NOTE: ALL TERM END FILES ARE DUE WITHIN ONE MONTH AFTER THE END OF EACH TERM, WITH THE EXCEPTION OF WINTER QUARTER WHICH IS DUE AT THE SAME TIME AS SPRING QUARTER.

* Files contain Phase II data elements.
**Assessment File is part of Phase I but first due to be reported October 1994

Figure 1

BEST COPY AVAILABLE

Chancellor's Office
MIS Phase II and Communication Projects

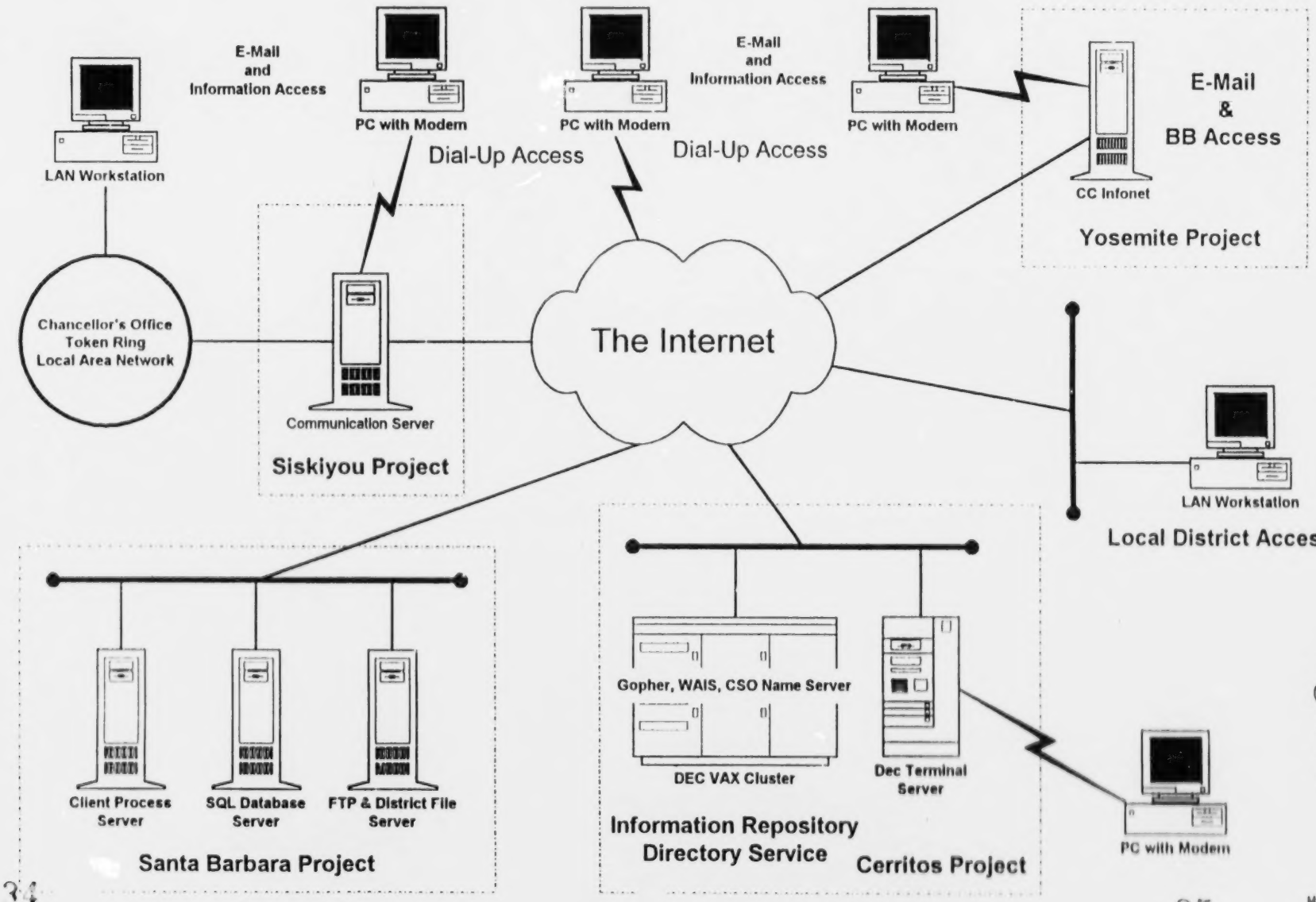


Figure 2

MISProj.vsd